Amendments to the Drawings

The attached sheet of drawings includes changes to Figure 2. This sheet that includes Figures 1 and 2 replaces the original sheet that included the same.

REMARKS

Claim 1 has been amended by incorporating the matter of claims 7 and 8 therein in order to more clearly point out the subject matter that Applicant regards as his invention. As such, claims 1, 2 and 4-6 and 9 and 10 are presently pending.

The drawings were objected to under 37 C.F.R. 1.83. The Examiner states that Figs. 1 and 2 only show the vibration damping structure as part of the fluid line. Applicant amended the drawings, specifically Fig. 2, to indicate that the dashpot 25 is positioned on the tubing 24 and not somehow within the tubing itself.

The Examiner rejected claims 1, 2 and 4-10 under 35 U.S.C. §112, first paragraph as failing to comply with the written description requirement. In the previous action it was indicated that the dashpot need not be in fluid communication with the refrigerant. Applicant stands by such description. The Examiner's position on this point is that the original disclosure does not specify as to how the vibrations are dampened by the dashpot, if the dashpot is not in fluid communication with the pulsing refrigerant.

Applicant traverses this ground of rejection as follows. In the present invention it is not the pulsing refrigerant that is to be damped because pulsations within the refrigerant drive the refrigeration cycle. Rather, it is the aim of the present invention, as recited in paragraph 5, to provide a resonant linear motor driven cryocooler system which can substantially avoid vibration transfer from the motor to the cryocooler. This vibration transfer occurs by transmission of vibrations through the connecting tubing. Consequently, the present invention as would be understood to those skilled in the art would be to change the vibratory mode of the connecting tubing. As indicated in the first sentence of paragraph 17, preferably, as shown in Fig. 2, dashpot 25 is positioned on connecting tubing 24, 26 between the resonant linear motor 20 and the cryocooler 30. The dashpot features indicated in Fig. 2 are a spring 91, a mass 92 and a dashpot 93. One or more of these features could be positioned on the connecting tubing.

The simplest model of a mechanical vibration is simply a spring that is anchored at one end and has a mass placed at another end. Assuming that the point at which the spring is anchored starts to vibrate, for example, due to the forced vibrations of a linear motor, some of the vibration energy will be

transmitted to the mass at the end of the spring causing it to vibrate at the same frequency. The frequency of such motion is well known and is a function of the mass and spring stiffness. In the instant system, the connecting tubing has a mass and it has a stiffness based upon its elasticity of the material. The function of the dashpot 25 features are clear to one skilled in the art as mechanisms to be added to the connecting tubing to dissipate energy. For example, the addition of a spring will change the stiffness of the system requiring energy to be dissipated into the spring. A mass adds inertia to the system causing vibration damping. A piston will dissipate vibration energy into a fluid causing the fluid to heat up and dissipate the energy as head. Consequently, one skilled in the art would therefore readily understand that these features of the invention have nothing to do with damping vibration within a pulsing fluid and would not be in contact with the fluid to function. However, as mentioned in the previous action and as indicated above, some of these features could be in contact with the pulsing fluid. For example, it is mentioned in the specification that the tubing could be flexible or curved. In such case, what is attempted to change the stiffness of the system by adding a "spring" directly to the tubing and in such case the dashpot features shown in Fig. 2 would in fact be in contact with the fluid.

The Examiner rejected claims 1, 2 and 4-10 under 35 U.S.C. §112 second paragraph as being indefinite. Applicant submits that in view of the amendments to claim 1, this ground of rejection is hereby rendered moot.

Applicant further submits that the rejections under 35 U.S.C. §103, claims 1-6, 9 and 10 as being unpatentable over Corey et al. ("Corey") in view of Wood and the rejections of claims 1, 2, 4-6 and 10 as being unpatentable over Corey in view of Kawano are hereby rendered moot by incorporation of the subject matter of claims 7 and 8 into claim 1 which has been indicated as containing allowable subject matter. However, Applicant points out that the Examiner is not correct in his position that the dashpot of Kawano would inherently absorb some of the vibration from the system. This is simply incorrect in that the spring and mass of Kawano is not able to dissipate energy as described above. In Kawano, the mass and spring has a forced vibration which is imparted to it by the pulsating fluid. Consequently, the connecting tubing would still vibrate and impart vibrations to the cryocooler. Additionally, as to Wood the type of system is exactly the type of system which is shown in the drawings and described in the

specification. However, Applicant submits that such a support as in Wood has not been used within the cryocooler art to dampen vibrations within connecting tubing of a cryocooler.

Claims 1, 2 and 4-6 were also rejected on the grounds of non statutory obvious type double patenting as being unpatentable over the claims of U.S. 6,938,426 in view of Corey. However, in the amendment to claim 1, the ground of rejection is likewise rendered moot. In this regard, the undersigned would like to take this opportunity to thank the Examiner for allowing a response to this ground of rejection given the oversight of not responding to this ground in the previous action.

In view of the amendments to the claims and the remarks set forth above, Applicant request reconsideration of the rejection and the allowance of all presently pending claims. Since the claims are in condition for allowance, prompt and favorable action is hereby respectfully solicited.

Respectfully submitted,

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Docket No. 21406
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I hereby certify that this correspondence is being deposited with The United States Postal Service with sufficient postage as first class mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on January 12, 2007.

Christina Mommens